



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>A61K</b>	<b>A2</b>	(11) International Publication Number: <b>WO 98/30189</b> (43) International Publication Date: 16 July 1998 (16.07.98)
--	-----------	---

(21) International Application Number: PCT/US98/00257

(22) International Filing Date: 9 January 1998 (09.01.98)

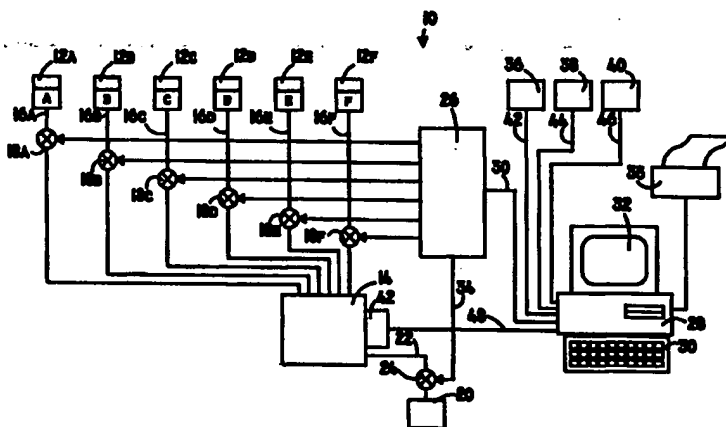
(30) Priority Data:  
08/781,455 10 January 1997 (10.01.97) US(71)(72) Applicant and Inventor: STEWART, Ernest, G. [US/US];  
101 West Club Drive, Thomasville, GA 31792 (US).(74) Agent: ASMAN, Sanford, J.; 570 Vinington Court, Dunwoody,  
GA 30350 (US).

(81) Designated States: AL, AU, BB, BG, BR, CA, CN, CZ, EE, GE, HU, IL, IS, JP, KP, KR, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR, TT, UA, UZ, VN, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published

*Without international search report and to be republished upon receipt of that report.*

(54) Title: POINT-OF-SALE COSMETIC FORMULATION APPARATUS AND METHOD



## (57) Abstract

An apparatus and method for formulating a customized, point-of-sale cosmetic composition for a particular individual. A base composition is supplied and one or more additives capable of changing properties of the base composition. Individual characteristics of the consumer are evaluated. The types and amounts of the additives to add to the base composition are determined in order to render the base composition compatible with the individual characteristics of the consumer.

**POINT-OF-SALE COSMETIC FORMULATION**  
**APPARATUS AND METHOD**

**Field of the Invention**

5       The present invention relates generally to cosmetic compositions. More particularly, the present invention relates to a point-of-sale apparatus for providing a cosmetic composition which is customized to an individual's characteristics at the point of sale and to a method for providing a customized point-of-sale cosmetic composition.

10

**Background of the Invention**

Cosmetics are most frequently provided "over the counter" at drug stores and department stores. Often, particularly at department stores, a salesperson will assist the consumer in selecting a cosmetic suitable for the consumer's

15   characteristics. For example, the salesperson may note that the consumer has oily skin and may, therefore, recommend a drying foundation for the consumer to apply to his or her skin. As another example, the salesperson may recommend that a fair skinned consumer purchase a particular shade of foundation or blush.

This technique relies on the salesperson's judgment, which may sometimes

20   be flawed or imperfect due to inexperience or haste, or, in the case of complexion coloring, distorted by the store's lighting. Further, some stores, such as discount

drug stores, may not be able to justify the expense of employing a salesperson to give advise customers on cosmetic selections.

The term "cosmeceutical" is used herein to refer to a cosmetic that also performs a pharmaceutical or medical function. For example, a face lotion may  
5 include an anti-acne compound or a drying compound. If a cosmeceutical contains a restricted compound, it may have to be prescribed by a medical doctor.

Cosmeceuticals may have to be specifically formulated to suit an individual's dermatological condition. A typical department store salesperson may not have  
the knowledge or experience to prepare or recommend cosmeceuticals.

10 Individuals often have particular conditions or circumstances which require customized cosmeceutical compositions. For example, with the advent of the use of alpha hydroxy acid (AHA) to purportedly prevent wrinkling, an individual may want a customized formulation containing AHA. Other conditions, such as skin pH, skin oiliness, skin elasticity, dandruff, etc. may determine an individual's  
15 cosmeceutical needs. Also, an individual may have an allergy to a commonly included cosmetic ingredient, so they may require a customized formulation which does not contain that ingredient. In another scenario, an individual may want to create his or her own cosmeceutical containing, for example, a particular fragrance or color.

20 The above needs and desires are not satisfied by any products or methods

currently known. Presently available cosmetics and cosmeceuticals are not customized to each individual's dermatological characteristics or sensory desires. Further, there is no presently available method for providing a point-of-sale customized cosmeceutical.

5           Heretofore there have been several efforts toward making an on-site apparatus for formulating cosmetic and personal care products. U.S. Patent No. 5,163,010, entitled FORMULATING DEVICE FOR COSMETICALLY FUNCTIONAL COSMETIC PRODUCTS which issued to G. J. Klein, et al. relates to an apparatus for formulating a custom mixed hair treatment product, 10 such as a permanent wave solution, a hair conditioner, a shampoo, dye, or another type of hair treatment compounds. While the Abstract and the Summary of the Invention portions of the Klein et al. patent speak generically of "...an apparatus for automatically formulating and dispensing a custom mixed cosmetic product at the point of sale in response to input criteria based on the customer's specific 15 needs...", and while the patent specification says that "...the dispensing means operates to automatically dispense pre-determined amounts of the plurality of cosmetically functional mixtures...", the actual disclosure within the specification is limited to cosmetic products relating to hair care. Further, the Klein et al. patent refers to the input of information regarding the customer's hair, but it describes no 20 means for either automatically or quantitatively determining such inputs.

Thus, the Klein et al. patent refers solely to certain predetermined qualitative criteria with respect to the hair. These include three categories – namely hair damage, hair porosity, and hair diameter. With respect to hair damage, the Klein et al. patent has four qualitative categories – namely, “resistant”, “normal”, “tinted”, or “bleached”. With respect to hair porosity, the Klein et al. patent refers to three qualitative categories – namely “low”, “medium”, and “high”. With respect to hair diameter, the Klein et al. patent refers to three qualitative categories – namely “fine”, “medium”, and “coarse”. While there is no disclosure in the Klein et al. patent with respect to the manner in which hair diameter is determined, the determination of hair damage is clearly qualitative, and the determination of porosity is described to be made by the “feel of the hair”. Thus, the Klein et al. patent describes an apparatus and method which is quite limited in scope in that it relates solely to hair treatment items and it uses an entirely qualitative, rather than quantitative, approach. In fact, as described in the Klein et al. patent, there are only thirty-six possible categories of hair, made up of the four types of hair damage, the three types of hair porosity, and the three types of hair diameter (i.e.,  $4 \times 3 \times 3 = 36$ ). Accordingly, the “custom” mixing which is described in the Klein et al. ‘010 patent is limited to mixing thirty-six predetermined formulations.

U.S. Patent No. 4,160,271, entitled COSMETIC SELECTION AND DISPLAY SYSTEM which issued to S. Grayson et al. on July 3, 1979 relates to an apparatus for determining the cosmetic requirements of an individual. As used in the Grayson et al. patent, the term "cosmetic" is used to refer to make up used for either (1) skin coloring, such as makeup, foundation, face powder, lipstick, eye shadow, and eye liner, or (2) skin preparation cosmetics, such as cleansers, astringents, fresheners, emulsions, and creams. The invention described in the Grayson et al. patent is a cosmetic analysis device which has a keyboard which is used to input the skin characteristics of the customer. While there appears to be a considerable amount of circuitry described in the Grayson et al. patent, the analyzer unit described therein is essentially a qualitative unit, which raises a series of questions to a user about the customer's skin coloring and characteristics. These questions are answered by pressing various keys on the analyzer. The output of the analyzer is used as an input to a skin color unit and a skin preparation unit. These latter units are used to select pre-existing formulations. Thus, this device has no any quantitative input, nor does it perform any type of point-of-sale formulation.

U.S. Patent Nos. 5,311,293 and 5,313,267, each entitled METHOD AND INSTRUMENT FOR SELECTING PERSONAL COMPATIBLE COLORS were issued to D.S. MacFarlane, et als. on May 10, 1994 and May 17, 1994,

respectively. Further, they appear to be related to U.S. Patent No. 4,909,632 which issued on March 20, 1990. These patents relate to an apparatus which can be used to quantitatively determine a customer's skin color.

U.S. Patent No. 5,537,211 entitled METHOD AND APPARATUS FOR  
5 SELECTING A WEARABLE TO MATCH AN OBJECT issued to O. E. Dial on  
July 16, 1996 describes a device which can quantitatively determine a customer's  
skin color. The device can then be used to match the customer's skin coloring to a  
group of cosmetics whose colors have been previously stored. Thus, while this  
device performs a quantitative color analysis, it is not used to formulate a  
10 matching cosmetic at the point-of-sale. The disclosure of the Dial patent  
incorporated herein, as it relates to a sensor which can be used with the present  
invention.

The following patents, are also representative of efforts which have been  
made to attempt to use an automated approach to assist customers in their selection  
15 of cosmetics at the point-of-sale. U.S. Patent No. 4,232,334 entitled COSMETIC  
APPARATUS AND METHOD issued to E. C. Dyson on November 4, 1980  
relates to an apparatus which helps a customer select a make-up pattern which  
matches her face.

U.S. Patent No. 5,168,320 entitled COLORIMETER issued to C. D. Lutz,  
20 et al. on December 1, 1992. This patent relates to a colorimeter for measuring

light color. The contents of the Lutz patent are incorporated herein as it shows one type of sensor which can be used with the present invention.

### **Summary of the Invention**

5       The apparatus of the present invention includes means for qualitatively and quantitatively evaluating particular dermatological characteristics and sensory desires of a particular individual at the point of sale of a customized cosmetic or cosmeceutical composition. The apparatus includes means for determining which  
10   of a number of additives to add to a base composition, and how much of the selected additives to add to the base composition, so that the dermatological and sensory properties of the customized composition will be compatible with the dermatological characteristics of the particular individual for whom the composition is being formulated.

      In a preferred embodiment, the invention includes an evaluation means for  
15   generating data relating to the individual's dermatological characteristics and sensory desires. That data is input into a computer, such as a programmed digital microcomputer. The computer is also told what type of cosmetic formulation is desired, e.g., foundation base, eye shadow, etc. The computer then generates an appropriate formulation for the customer.

20       While the data is collected from the customer at the point of sale, in various



embodiments of the invention, the actual formulation of the customized cosmetic or cosmeceutical composition occurs either at the point of sale, or at a location which is remote from the point of sale.

In a preferred embodiment of the invention, the apparatus is fully  
5 automated, and the formulation occurs at the point of sale. In this embodiment there are various receptacles containing base compositions and additives. They are interconnected by a plurality of tubes, or other dispensing means, and there are a number of computer controlled valves which lead from the receptacles into a  
mixing pot.

10 The programmed computer controls the operation of the valves, determining which, and how much, base composition to start with, and which and how much of the additives to deliver to the mixing pot so as to appropriately modify the base composition. The computer also controls the time, temperature, and other parameters of the mixing process.

15 In other aspects of the invention, the formulation means is located at a location which is remote from the evaluation means. Data collected by the evaluation means is transferred via a communications channel to the formulation means where the actual formulation takes place.

In yet another aspect of the invention, the evaluation means is used to  
20 generate a formulation, and the actual formulating of the customized cosmetic is

accomplished manually.

In another aspect, the present invention is a method for providing a point-of-sale cosmeceutical or cosmetic composition that has been customized for an individual's particular characteristics. The method includes the steps of supplying  
5 a base composition and supplying at least one additive that can be added to the base composition to modify at least one property of the base composition. Another step of the present invention is qualitatively and quantitatively determining the dermatological or sensory characteristics of the individual and the amount and types of additives to add to the base composition to modify the base  
10 composition in accordance with the needs and desires of the individual. Another step of the invention is adding the selected additives to the base composition and mixing the combination to form a homogenous customized composition.

Various means, which are known in the cosmetic and dermatological arts, can be employed for qualitatively and quantitatively measuring skin and hair  
15 parameters. For example, skin pH can be measured with pH surface electrodes, and skin oiliness can be measured with tape strips, such as those sold as SEBUTAPE™ by CuDerm Corp. of Texas.

The present invention provides an apparatus and method for supplying a cosmetic or cosmeceutical composition which is based upon a quantitative and  
20 qualitative evaluation of the customer which takes at the point of sale. The

composition can be customized to be compatible with the consumer's particular dermatological characteristics or to satisfy the consumer's sensory desires. Thus, the invention offers the advantage of providing a cosmetic or cosmeceutical composition that has been customized for the individual. The composition may be  
5 formulated to be compatible with the individual's skin, for example, and it may be formulated to avoid any allergenic ingredients.

The point-of-sale apparatus and method of the present invention can be applied to formulating shampoo, foundation, blush, lipstick, lip gloss, soaps, ~~and~~ sunscreen lotions, and other cosmetics. Some of the various properties of these  
10 cosmetics that can be altered include the oiliness, the pH, the addition of anti-dandruff ingredients, the addition of anti-acne ingredients, the omission of allergenic ingredients, and so on.

Additional advantages and novel features of the invention will be set forth, in part, in the following detailed description of a preferred embodiment, and in  
15 part they will become apparent to those skilled in the art upon examination of the following detailed description, or they may be learned by the practice of the invention. The objects and advantages of the invention may be realized and attained by means of the processes and combinations particularly pointed out in the appended claims.

20

### **Brief Description of the Drawings**

In the Drawing:

FIG. 1 is a schematic view of an apparatus in accordance with the present invention;

5        FIG. 2 is a schematic view of an alternative embodiment of the apparatus in accordance with the present invention; and

FIG. 3 is a flow chart illustrating the method of the present invention.

### **Detailed Description of the Exemplary Embodiment**

10        Referring generally to FIG. 1, an apparatus 10 for formulating cosmetics in accordance with the present invention is illustrated in schematic form. The apparatus 10 includes several receptacles 12a, 12b, 12c, 12d, 12e, 12f, for holding compositions A, B, C, D, E, and F, respectively. Some of the receptacles, e.g., receptacles 12a, 12b, 12c, may hold base compositions (A, B, C), while other  
15        receptacles, e.g., receptacles 12d, 12e, 12f, may hold additives (D, E, F), which are intended to be added to the base compositions (A, B, C). Those skilled in the art will recognize that the schematic shown in FIG. 1 is intended to be illustrative of the present invention, as there would, typically, be provision for many more base and/or additive compositions than are illustrated in FIG. 1.

20        The apparatus 10 also includes at least one mixing pot 14. In the preferred

embodiment of the invention, the mixing pot 14 is connected to the receptacles 12a, 12b, 12c, 12d, 12e, 12f, by means of a plurality of tubes 16a, 16b, 16c, 16d, 16e, 16f, each of which is shown to have a remotely controlled valve, 18a, 18b, 18c, 18d, 18e, 18f, respectively, for controlling the delivery of the base composition or additive from its respective receptacle, 12a, 12b, 12c, 12d, 12e, 12f, through one of the tubes 16a, 16b, 16c, 16d, 16e, 16f, and then into the mixing pot 14.

The apparatus 10 further comprises a receiving vessel 20, which receives the ingredients, through a tube 22, connected to the mixing pot 14. After the ingredients have been mixed to homogeneity in the mixing pot 14, as will be more fully described hereinafter, the microcomputer will cause a valve 24, in the tube 22, between the mixing pot 14 and the receiving vessel 20, to open, thereby allowing the formulated mixture to flow to the receiving vessel 20 from the mixing pot 14. In the preferred embodiment of the invention, the operation of the valves, 18a, 18b, 18c, 18d, 18e, 18f, 24, is controlled by a valve controller 26 which is connected to a microcomputer 28, via a control bus 30. The various valves, 18a, 18b, 18c, 18d, 18e, 18f, 24, are connected to the valve controller 26 by control lines, 32a, 32b, 32c, 32d, 32e, 32f, 34, respectively, as illustrated.

As will be obvious to those skilled in the art, the dispensing of the ingredients, as well as the dispensing of the resulting composition can all be

accomplished under the control of the microcomputer 28.

With continued reference to FIG. 1, the microcomputer 28 preferably includes a keyboard 30 and a monitor 32. A point-of-sale terminal or a printer 35, the use of which will be explained hereinafter, is also preferably connected to the microcomputer 28. In addition, the apparatus 10 of the present invention can optionally include several sensors, such as a pH sensor 36, a color sensor 38, and a generic sensor 40, which may be used to sense other characteristics of the individual for whom the formulation is being prepared. As used herein the term "generic sensor" is intended to include any appropriate means for determining a characteristic of interest, whether such means is currently available or becomes available hereafter. Accordingly, it is the intent of that the apparatus 10 be capable of sensing any characteristic of the individual for whom the formulation is being prepared which is capable of such remote sensing.

The various sensors 36, 38, 40 are connected to the microcomputer 28 by means of lines or busses 42, 44, 46, as shown. As will be obvious to those skilled in the art, depending upon the specifics of the particular sensors 36, 38, 40, it may be necessary to use an interface to connect the sensors 36, 38, 40 to the microcomputer 28. As such interfaces can be built into the sensors 36, 38, 40, or, optionally, installed within the microcomputer 28, they are not shown. Further, it may be desirable to include specific types of lighting or filtered lighting in

association with light sensitive sensors, such as the color sensor 38.

The apparatus 10 also preferably includes a mixer controller 42, shown to be associated with the mixing pot 14. The mixer controller 42 is connected to the microcomputer 28 by means of a control line 48. The mixer controller 42 can

5 contain both temperature sensors and heater units, which can be used to sense and control the temperature within the mixing pot 14. The mixer controller 42 can also contain means for agitating the formulation contained within the mixing pot 14 and for sensing the homogeneity of the resulting mixture. Feedback means may be included in the mixer controller 42 whereby the microcomputer 28 can be used to

10 sense and control the temperature, mixing rate, and composition consistency measurements from the mixing pot 14. The mixer controller 42 can also include level sensors. Similar sensors can also be connected to the various receptacles 12a, 12b, 12c, 12d, 12e, 12f, in order to allow the microcomputer 28 to sense the levels in the various receptacles, whereby the operator can be advised if a level is

15 either too low, or if there is insufficient material in a receptacle to generate the desired amount of formulation.

While the apparatus 10 illustrated in FIG. 1 is shown to be gravity fed, those skilled in the art will recognize that pressure feed devices, such as pumps or injectors could also be used without departing from the inventive concept

20 described herein.

In the operation of the invention, an individual who is seeking to purchase a particular cosmetic could be tested using the sensors 36, 38, 40, in order to quantitatively determine such characteristics as their skin pH (using pH sensor 36), skin color (using color sensor 38), or other characteristics (using generic sensor 40). Alternatively, tests can be manually conducted, and their results can be input into the computer 28 using the keyboard 30. Alternatively, a questionnaire can be provided to the individual, either as a preprinted form, or on the monitor 32, or printed out, using the printer 35. The answers provided, e.g., an allergy to a particular base material or additive, can be entered into the computer using the keyboard 30, and then the computer can determine the specific formulation required by the individual. Once the formulation has been determined, the computer 28 can proceed to dispense the materials from the receptacles 12, into the mixing vessel 14, and ultimately into the dispensing vessel 20.

As will be recognized by those skilled in the art, the formulation generated for the individual, as well as a sales invoice, can be printed out using the printer 35. Optionally, the computer 28, can be connected to a credit card scanner, or to the store's main computer system for providing credit card verification, and the usual point-of-sale information.

It will be clear to those skilled in the art that the invention is not intended to be limited by the disclosure of six receptacles 12a, 12b, 12c, 12d, 12e, 12f. The



limit on the number of receptacles, and the limit on the number of mixing vessels 14, in FIG. 1, was solely for purposes of enhancing the clarity of the description.

In one embodiment of the invention, the apparatus 10 may provide means for formulating a shampoo, a conditioner, and a shower gel. In such case, the  
5   receptacles 12a, 12b, 12c for base compositions A, B, and C could include amounts of the below Examples 1, 2, and 7. Additives contained in receptacles 12d, 12e, 12f could include lauramide DEA, water, NaCl and/or KCl, humectants, conditioners, color, fragrance, moisturizer, aloe, silicones, gloss agents, vitamins, panthenol, setting agents, antidandruff agents, oils, and/or protein.

10       In order to use the apparatus 10 to formulate a shampoo, the operator of the apparatus 10 would input into the microcomputer 30 the cosmetic which was desired. The operator would then input the results of the evaluation of the consumer's personal desires (e.g., a favored fragrance), allergies, and the quantitative information obtained from the manual and/or automatic testing which  
15   was performed. The evaluation could include the hair pH and/or oiliness, the presence of dandruff, the wave of the hair, any coloring desired, any fragrance desired, and other characteristics. The microcomputer 28 would determine which, and how much, of the available additives to add to the base composition, and it would control the dispensing of the base composition and those additives to the  
20   mixing pot 14. The microcomputer 28 would then control the mixing of the

ingredients for a prescribed length of time sufficient to achieve homogeneity of the mixture. Alternatively, a sensor could be used in the mixing pot 14 to determine the mixing time based upon the consistency of the mixture. The mixture would then be dispensed into the receiving vessel 20 for sale to the consumer.

5

#### **Data Collection Remote from Cosmetic Formulation**

While the present invention is primarily intended for use to formulate and produce cosmetics at the point-of-sale, there may be situations in which it is desirable to have the formulation performed at a site different from the site at which the customer is located. By way of example, in a large department store, it may be desirable to have multiple locations at which customer information can be input into the system, while it may be desirable to have only a single location at which cosmetics formulations are actually mixed and dispensed. Accordingly, in an alternative embodiment of the invention, shown in FIG. 2, the control bus 30 and the control line 48 (of FIG. 1) could be replaced by a communications channel 31.

As used herein, the term "communications channel" is intended to include any type of means for digital communication, including, but not limited to, a local area network ("LAN"), a wide area network ("WAN"), a network of networks (e.g., the Internet), modems, shipment of diskettes, faxing of custom formulations,

or other means for providing communications. Thus, it is possible to use the present invention, not only within a single location, such as a beauty salon or a department store, but also in a system in which there are one or more data collection means 35 which can be placed in multiple stores which are remotely located from a formulation location where the formulation means 33 could be operated. In such situations, a customer could go to a store to order a cosmetic having a custom formulation. The customer's data could be collected by the data collection means 35 at one location, and the formulations could actually be produced at a remote location for shipment to the customer. As will be recognized by those skilled in the art, the data collection means could either transmit the customer's data to the remote formulation location as the data is collected, or the data could be stored locally and then transmitted to the formulation location. Such transmission of data could be accomplished in any way in which data is generally transmitted, including, but not limited to connection via a network, connection via modems, shipment of media (such as a diskette) containing the data, or the faxing of the printouts containing the formulations.

In those instances in which the actual mixing of the cosmetic is done at a point which is remote from the customer's location, those skilled in the art will recognize that the information needed to create the formula used for formulation is still being done at the point of sale, *e.g.*, the customer's location.

Referring to FIG. 3, it should also be obvious to those skilled in the art that the present invention can be used in yet another manner in which the formulation of the cosmetic takes place at a site remote from the customer. In certain situations, it may be desirable to limit what takes place at the customer's location to only the evaluation of the customer's characteristics. Thus, an evaluation means 137 can be comprised of a variety of sensors 136, 138, 140, which are connected via lines 142, 144, 146, to a computer 128 having a keyboard 130, a monitor 132, and a printer 135. The data from the evaluation means 137 can be transferred to another computer 28, of the type heretofore described (with reference to FIG. 1) via a communications channel 31, and formulation can be done at a remote site. The embodiment shown in FIG. 3 is particularly well suited for situations in which a large formulator is operating the system 10, while several small businesses operate evaluation means 137 at remote locations.

15

#### **Manual Formulation**

As indicated above, with respect to FIG. 2, the formulation means 33 may be separated from the evaluation means 37 while still using the evaluation means 37 to quantitatively identify the parameters which would make a particular formulation uniquely suitable for a particular customer. Accordingly, it is within the scope of the present invention to print out the formulation on the printer 35, or

20

display it on the screen of the monitor 32, whereby a cosmetic could be manually formulated pursuant to instructions provided by the computer 28.

Where manual formulation of the custom cosmetic is appropriate, one would need to use only an evaluation system 137 of the type shown on the right side of FIG. 3. The formula produced by the computer 128 could be printed out on the printer 135 or on the monitor 132, and appropriate off the shelf base compositions and additives could be used. For example, various additives could be prepackaged in bottles, or sealed packages, or in ampoules, and they can be hand mixed in accordance with instructions generated by the computer 128.

10

#### **Powdered Formulations**

In another aspect of the invention, there can be certain base materials, such as powders, which are not susceptible to being dispensed from receptacles, through tubes, as illustrated in FIG. 1. In accordance with an alternative embodiment of the invention, the formulation would begin with the powder held in an appropriate container into which the appropriate additives would be added. In such instances, the mixing pot 14 and the receiving vessel 20 would be replaced by the container holding the base powder which was selected, and the additives can be added either manually or automatically. As will be obvious to those familiar with powdered cosmetics, the particle size of the powder which is selected for use

20

as the base material typically depends upon the pore size of the individual for whom the cosmetic is being formulated.

### **Formulation Method**

5 Referring now to FIG. 2, the foregoing method is illustrated in the form of a flow chart 100. As shown, the steps which are performed in accordance with the invention include the selection of a base composition 102, the evaluation and quantification of specific physical characteristics of the individual 104, the determination of specific consumer preferences and/or allergies 106, the  
10 determination and quantification of the appropriate additives which must be added to the base composition 108, the mixing of the composition 110, and the dispensing of the mixed composition 112.

As will be recognized by those skilled in the art, several of the foregoing steps can be performed in different orders than are illustrated in the flow chart 100  
15 without departing from the invention. For example, steps 104 and 106 can be interchanged. In addition, several steps involving the actual control of the microcomputer 28 have been omitted for clarity, but those skilled in the art will understand from the foregoing description, that they are present.

The present invention is applicable to a wide range of cosmetic and  
20 cosmeceutical compositions. By way of manufacturing examples, which are

intended to be exemplary, but not limiting, the system and method are applicable to the formulation of a shampoo, a hair conditioner, a sunscreen lotion, an alpha hydroxy acid (AHA) lotion, an exfoliating gel, an antiperspirant stick, a shower gel, a roll-on lip gloss, a lipstick, or a liquid makeup or foundation. The system  
5 includes a base composition and one or more additives that are added to the base composition to change selected properties of the base composition.

The base composition should be a standard or "neutral" composition, meaning that it should include only the ingredients that are to be included in every formulation of the composition. In other words, ingredients that will potentially be  
10 added to modify properties of the base composition should not be included in the base composition. For example, the base composition for most cosmetics should not include a fragrance or color and should have a neutral pH and an oil content that is below the desired oil content of most consumers. The base composition preferably should not include any ingredients that are allergenic to some  
15 individuals. The base composition should preferably be provided in a concentrated form, so that it can be diluted with desired additives.

The invention further includes one or more additives to be added to the base composition to change selected properties of the base composition. Typically, these additives will be dissolved in a solvent, such as water, alcohol or an oil, and  
20 the base composition will be diluted with the solvated additives. The additive(s)

should be in a form which allows them to be blended homogeneously with the base composition. Commonly used additives include pH adjusters such as acids and bases, pH stabilizers such as buffers, oils, drying agents, anti-dandruff ingredients, salts, colors, fragrances, moisturizers, gloss agents, vitamins, AHA, 5 sunscreen agents, insect repellents, exfoliates. However, the foregoing list, while illustrative, is not intended to be limiting.

The invention also includes means for evaluating the individual characteristics of the consumer. For example, dermatological characteristics, such as the consumer's skin or hair pH or oil content can be evaluated using chemical 10 and physical tests. Such tests can be used to, importantly, quantitatively measure the individual characteristics of particular consumers.

pH surface electrodes are available that can be placed on the surface of the skin to measure the individual's skin pH. Another method which may be used to measure the overall skin pH of, for example the consumer's face, is to wash the 15 face with water, collect the water, and then measure the pH of the water. Note that the skin should be cleansed before this method is used. In the present invention, this characteristic can be measured and preferably input into the computer. The pH of the hair can be measured by similar means and processes.

Skin hydration or dryness can be measured qualitatively and quantitatively 20 using a conductivity probe that attaches to the skin. The more moisture present,



the higher the conductivity. Another means which may be used to measure skin dryness is a skin stripping tape which is applied to the skin and then stripped off. The tape is examined under a microscope where the quantity of removed skin cells can be calculated. If the amount of skin cells is high, then the skin is generally dry  
5 and extra moisturizer should be added to the formulation.

Another parameter that could be measured is the quality and quantity of the skin's barrier function. The skin has a natural barrier made up of lipids which prevent excessive moisture loss to the environment. Factors such as aging, exposure to sunlight, and use of certain medicines can cause the natural barrier to  
10 degrade. The barrier can be measured by performing a TEWL (trans epidermal water loss) test such as with a SERVOMED™ instrument. If the barrier is degraded, lipids such as EFAs (essential fatty acids) could be added to the base formulation. Also, fiber forming polymers or more hydrophobic lipids such as petrolatum could be included.

15 Skin oiliness can be assessed with means such as a tape strip which is applied to the skin. One such product is sold by CuDerm Corp. of Texas under the trade name SEBUTAPE™. Similar means can be used to measure the oiliness of the hair. If the customer's skin is oil-deficient, lipids can be added to the formulation or an additive which reduces sebum production, such as BIOPOL  
20 OE™, sold by Brooks Industries, can be added. If the skin is too oily, oil

absorbing polymers can be added to the formulation.

A visual evaluation can also be used for evaluating characteristics such as skin color, dandruff, dry skin, and such. Furthermore, evaluation means can include a questionnaire filled out by the consumer to evaluate allergies, body odor,  
5 desired fragrances, and desired colors. The evaluation means can also include taking into account a doctor's prescription for AHA, for example, or anti-acne medication.

The results of the above evaluations can be input into a computer database or maintained in hard copy. In the preferred embodiment, a vast array of  
10 characteristics are evaluated so that the cosmeceutical can be formulated to the individual's exact requirements.

The system further includes means for determining which additives to add to the base composition and how much of the additives to add. In the preferred embodiment, the system includes a microcomputer with associated software which  
15 is used to determine the amount of those additives to add to a particular base composition to make a particular cosmetic composition. The additive determining means could alternatively comprise manual calculation of the types and amounts of additives. Of course, the types of additives to add to the base composition will depend upon the purpose of the cosmetic composition.

20 Particular embodiments of cosmetic compositions that can be formulated in

accordance with the principles of the invention are put forth in the following examples. In each Example, the base composition ingredients add up to less than 100% because the base composition should be diluted before use with water and/or solvated additives.

5

**Example 1 - Shampoo Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
	Ammonium Laureth Sulfate	30
10	Ammonium Lauryl Sulfate	20
	Lauramide DEA	2
	Deionized water	35
	Preservative	1
	Glycol Stearate	2

15        The pearlescent base of Example 1 provides excellent cleansing for people who want a high foaming shampoo without color, fragrance or conditioning with the addition of 10% water. After qualitative and quantitative evaluation of the consumer, other ingredients could be added to suit the consumer's profile. Additional ingredients include Lauramide DEA, water, NaCl, humectants,

20    conditioners, color, fragrance, moisturizers, aloe, silicones, gloss agents, vitamins, Panthenol, setting agents and/or antidandruff agents, each of which could be added as desired or required. The level of cleansing could be increased for oily hair. Oils could be added for dry hair.

**Example 2 - Hair Conditioner Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
5	Deionized Water	80
	Stearalkonium Chloride	2
	Glyceryl Stearate (and)	
	PEG-100 Stearate	7
	Preservative	1

10

The conditioning base of Example 2 provides excellent conditioning for people who want a good wet/dry comb without color, fragrance or conditioning with the addition of 10% water. Additional protein, aloe, water, KCl, humectants, conditioners, silicones, color, fragrance, moisturizers, vitamins, Panthenol, and/or setting agents could be added as desired or required.

15

**Example 3 - Sunscreen Lotion Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
20	Deionized Water	68.45
	Propylene Glycol	2.00
	Carbomer	0.30
	Octyl methoxycinnamate	7.50
	Oxybenzone	4.00
25	Hydrogenated Castor Oil	0.75
	Octyl Palmitate	10.00
	Cetearyl Alcohol	
	(and) Ceteareth-20	1.00
	PVP/Eicosene Copolymer	3.50
30	DEA Cetyl Phosphate	1.50
	Preservative	1.00

The sunscreen base of Example 3 provides excellent protection (SPF 15) for people who want a good sunscreen without color or fragrance with the addition of 10% water. Protein, water, anti-peeling agents, aloe, humectants, conditioners, silicones, color, fragrance, moisturizers, vitamins and/or Panthenol could be added as desired or required.

#### **Example 4 - AHA Lotion Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
10	Deionized Water	46.35
	Propylene Glycol	2.00
	Xanthan	0.40
	Magnesium Aluminum Silicate	2.00
15	Oxybenzone	4.00
	Hydrogenated Castor Oil	0.75
	Octyl Palmitate	10.00
	Cetearyl Alcohol	
	(and) Ceteareth-20	1.00
20	Glyceryl Stearate	
	(and) PEG-100 Stearate	2.50
	Deionized Water	10.00
	Polyolprepolymer	5.00
	AHA	5.00
25	Preservative	1.00

The AHA base of Example 4 provides excellent improvement in skin turnover for people who want a good AHA cream/lotion without color or fragrance with the addition of 10% water. Protein, water, aloe, humectants, conditioners, silicones, color, fragrance, moisturizers, vitamins and/or Panthenol could be added

as desired or required. Additionally, more AHA and pH adjusters could be added for those people who require such additives.

**Example 5 - Exfoliating Gel Base Composition**

5		<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
		Deionized Water	79.5
		Carbomer	0.5
		Propylene Glycol	2.5
10		Triethanolamine 99%	0.5
		Glycereth-26	2.0
		Witch Hazel	10.0
		Polyethylene	3.0
15		Preservative	1.0

The exfoliating base of Example 5 effectively removes dead skin from the face, elbows, knees or other areas without color or fragrance with the addition of 10% water. Protein, water, humectants, conditioners, aloe, silicones, color, fragrance, moisturizers, vitamins and/or Panthenol could be added as desired or required. Additionally, more exfoliates could be added for those people who require such additives.

**Example 6 - Antiperspirant Stick Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
5	Glyceryl Stearate (and) PEG-100 Stearate	2
	Stearyl Alcohol	20
	Cyclomethicone	50
	Aluminum Zirconium Tetrachlorohydrate gly	20
10		

The antiperspirant base of Example 6 provides effective sweat control without color or fragrance with the addition of 10% cyclomethicone and heating or melting to insure uniformity. Protein, water, humectants, aloe, conditioners, silicones, fragrance, moisturizers, vitamins and/or Panthenol could be added as

15 desired or required.

**Example 7 - Shower Gel Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
20	Ammonium Laureth Sulfate	30
	Ammonium Lauryl Sulfate	20
	Cocamidopropyl Betaine	5
	Lauramide DEA	35
25	Preservative	10

The clear gel base of Example 7 provides excellent cleansing for people who want a high foaming shower gel without color, fragrance or conditioning with the addition of 10% water. Additional Lauramide DEA, water, NaCl, humectants,

conditioners, color, fragrance, moisturizers, aloe, silicones, gloss agents, vitamins and/or Panthenol could be added as desired or required.

**Example 8 - Roll-On Lip Gloss Base Composition**

5

<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
Polybutene	90

The lip gloss base of Example 8 provides excellent gloss for lips with the addition of 10% polybutene. Conditioners, flavor, sunscreen, moisturizers, silicones, vitamins, Panthenol and/or aloe could be added as desired or required.

**Example 9 - Lipstick Base Composition**

15

<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
Candelilla Wax	9
Microcrystalline Wax	2
Diethyl Sebacate	25
Castor oil	20

20

To the lipstick base composition of Example 9 would be added a mix of castor oil and color as desired. Additionally, moisturizers, antioxidants, flavor, aloe, vitamins, sunscreen and/or silicones could be added as desired or required.



**Example 10 - Liquid Makeup/Foundation Base Composition**

	<b><u>Ingredient</u></b>	<b><u>% of final composition</u></b>
	Deionized Water	50.0
5	Xanthan Gum	0.4
	Magnesium Aluminum Silicate	2.0
	Butylene Glycol	5.0
	Stearic Acid	3.0
	Isopropyl Isostearate	10.0
10	Glyceryl Stearate	
	(and) PEG-100 Stearate	2.5
	Mineral Oil	5.0
	Triethanolamine 99%	1.0
15	Preservative	1.0

The liquid makeup base composition of Example 10 is a good base suitable for the inclusion of humectants, vitamins, antioxidants, sunscreen, pigments, aloe, and/or fragrance as desired or required.

The foregoing description of preferred embodiments of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. As will be obvious to those skilled in the art, many modifications and variations are possible in light of the above teachings. It is intended that the scope of the invention be defined by the Claims appended hereto.

**Claims**

What is claimed is:

1. A point-of-sale apparatus for providing a cosmetic composition customized for an individual's characteristics, comprising:
  - (a) means for evaluating at least one particular characteristic of the individual;
  - 5 (b) means for holding at least one base composition having at least one property;
  - (c) means for holding at least one additive capable of changing said at least one property of said base composition; and
  - (d) means for determining the amount of said at least one additive to add
- 10 to said at least one base composition to change said at least one property of said base composition so that said changed base composition is compatible with the individual's at least one particular characteristic.
2. The point-of-sale apparatus of Claim 1 wherein said at least one property of said base composition is its pH and the characteristic of the individual is his or her skin pH, and wherein said at least one additive is a pH adjuster.

3. The point-of-sale apparatus of Claim 2 wherein said means for evaluating is a pH surface electrode placed on the individual's skin.
4. The point-of-sale apparatus of Claim 1 wherein said means for determining includes a programmed digital computer which is running computer software programmed to receive the results from said evaluation means and calculate the type and amount of said at least one additive to add to said base composition to render said base composition compatible with the individual's characteristic.
5. The point-of-sale apparatus of Claim 1 wherein said at least one property of said base composition is its oil content and the characteristic of the individual is his or her skin or hair oiliness, wherein said at least one additive is an oil or drying agent, and wherein said evaluation means quantitatively determines the oiliness of said individual's hair or skin.
6. The point-of-sale apparatus of Claim 1 wherein said means for determining is a programmed digital computer which is running computer software and said evaluation means generates quantitative data that is input into said programmed digital computer.

7. The point-of-sale apparatus of Claim 1 wherein said means for evaluating is located at a location which is remote from said means for determining, and said apparatus further comprises a communications channel between said means for evaluating and said means for determining.

8. The point-of-sale apparatus of Claim 7 wherein said communications channel is comprised of a local area network.

9. The point-of-sale apparatus of Claim 7 wherein said communications channel is comprised of a wide area network.

10. The point-of-sale apparatus of Claim 7 wherein said communications channel is comprised of a network of networks.

11. The point-of-sale apparatus of Claim 7 wherein said communications channel is comprised of a telephone network.

12. The point-of-sale apparatus of Claim 11 wherein said communications channel makes use of facsimile transmission over said telephone network.

13. A method for providing a point-of-sale cosmetic composition customized for an individual, comprising the steps of:

- (a) supplying a base composition having dermatological properties;
- (b) supplying at least one additive for adding to said base composition
- 5 for modifying said dermatological properties of said base composition;
- (c) evaluating and quantifying physical characteristics of the individual which are capable of being affected by said cosmetic composition;
- (d) determining the amount of said at least one additive to add to said base composition to provide a final cosmetic composition compatible with the
- 10 characteristics of the individual;
- (e) adding said determined amount of said additive to said base composition; and
- (f) mixing said additive with said base composition to form a homogenized, customized cosmetic composition.

14. The method of Claim 13 wherein a programmed digital computer which is running computer software is input with the quantitative physical characteristic data about said individual and determines the amount of said at least one additive to add to said base composition to provide a cosmetic composition
- 5 compatible with the characteristics of the individual.

15. The method of Claim 14 wherein said programmed digital computer which is running computer software further controls the addition and mixing of said at least one additive to said base composition.

16. An apparatus for formulating a point-of-sale customized cosmetic, comprising:

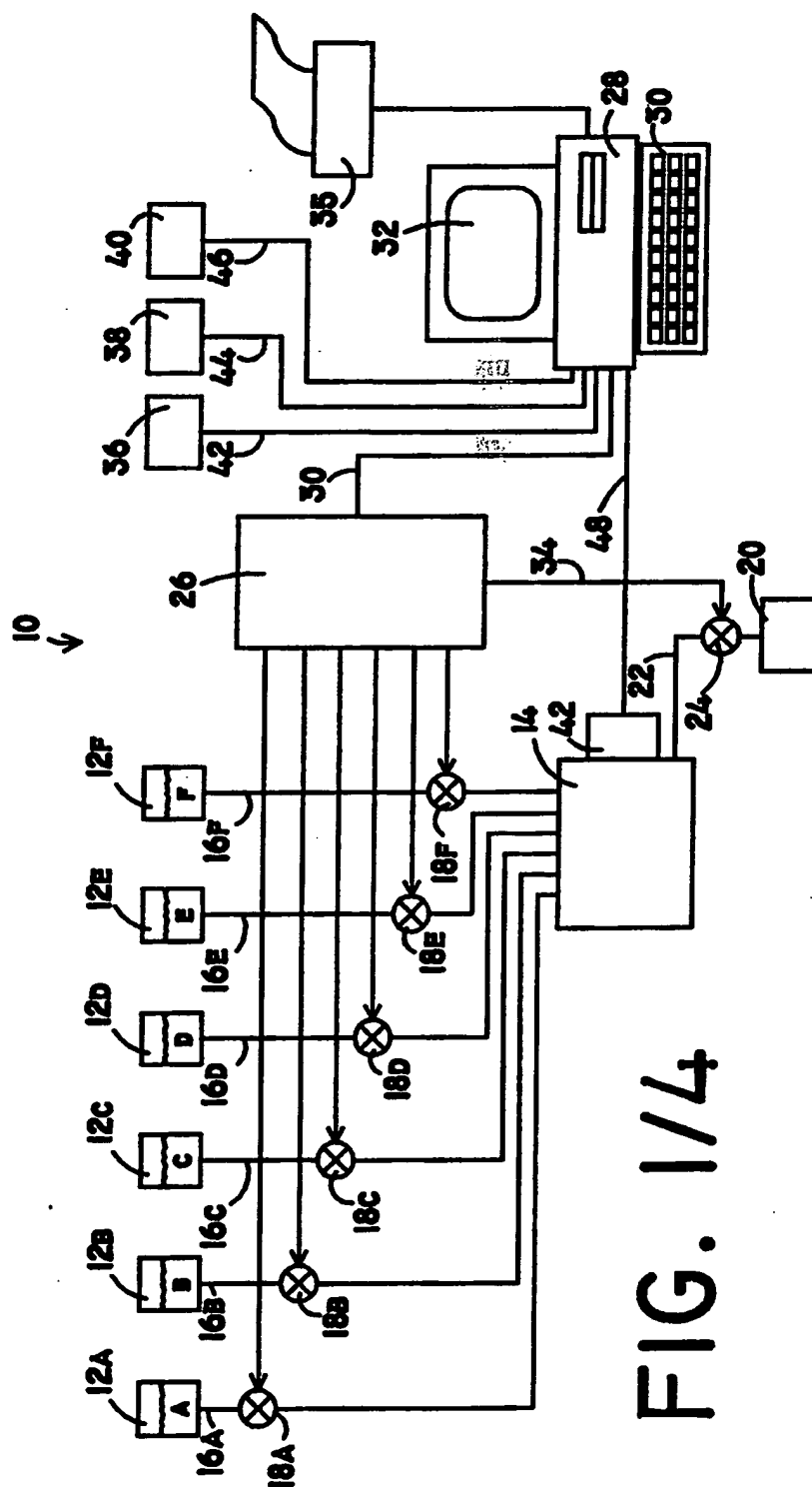
(a) at least one receptacle containing a base composition;

(b) ~~at~~ at least one receptacle containing an additive capable of changing at  
5 least one property of said base composition;

(c) a mixing pot for receiving a portion of said base composition and a portion of said additive;

(d) at least one valve for controlling addition of said base composition and said additive to said mixing pot; and

10 (e) a microcomputer for controlling said at least one valve,  
wherein said microcomputer is input with information regarding characteristics of the individual and determines the amount of said at least one additive to add to said base composition to prepare a cosmetic composition compatible with the individual's characteristic.



**FIG. 1/4**

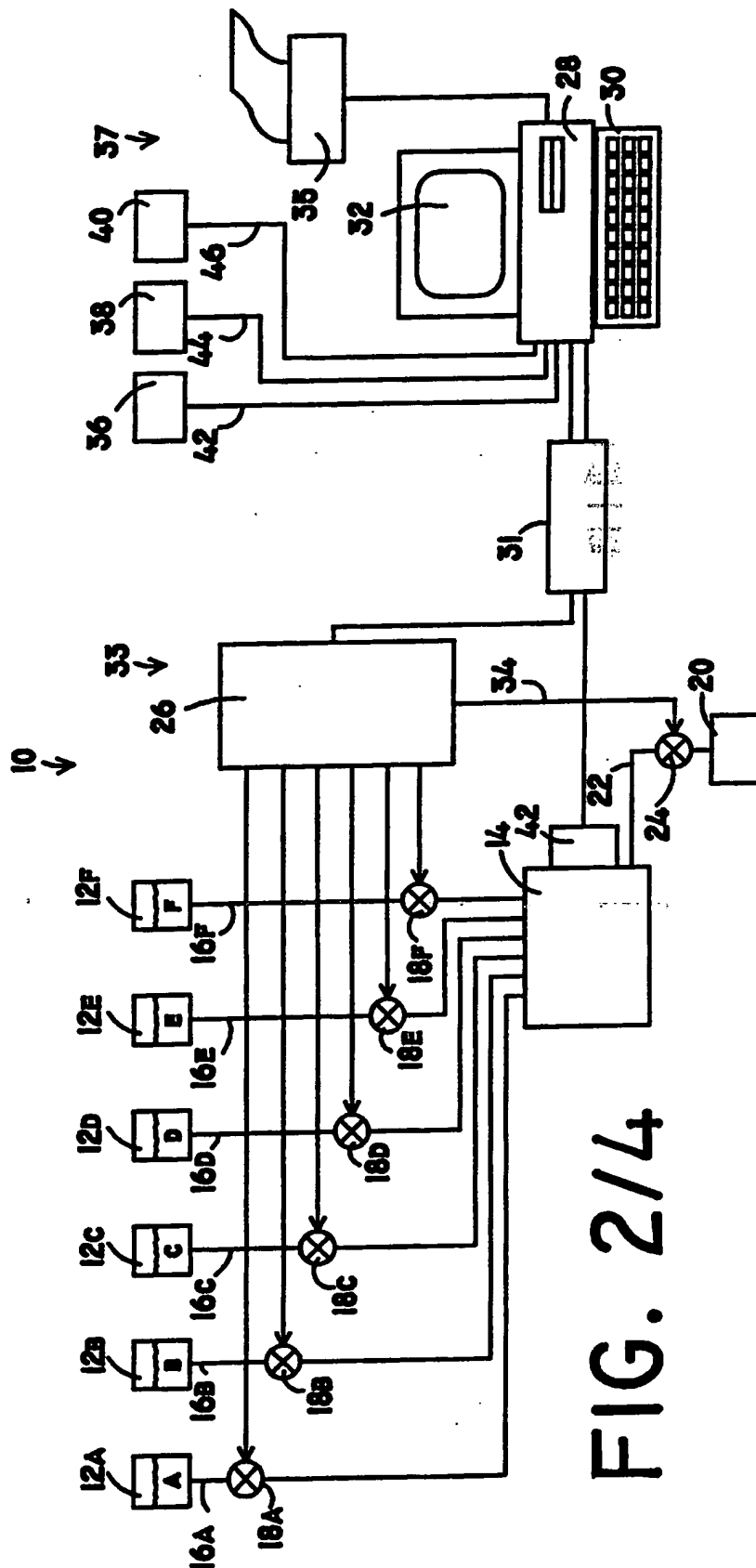


FIG. 2/4



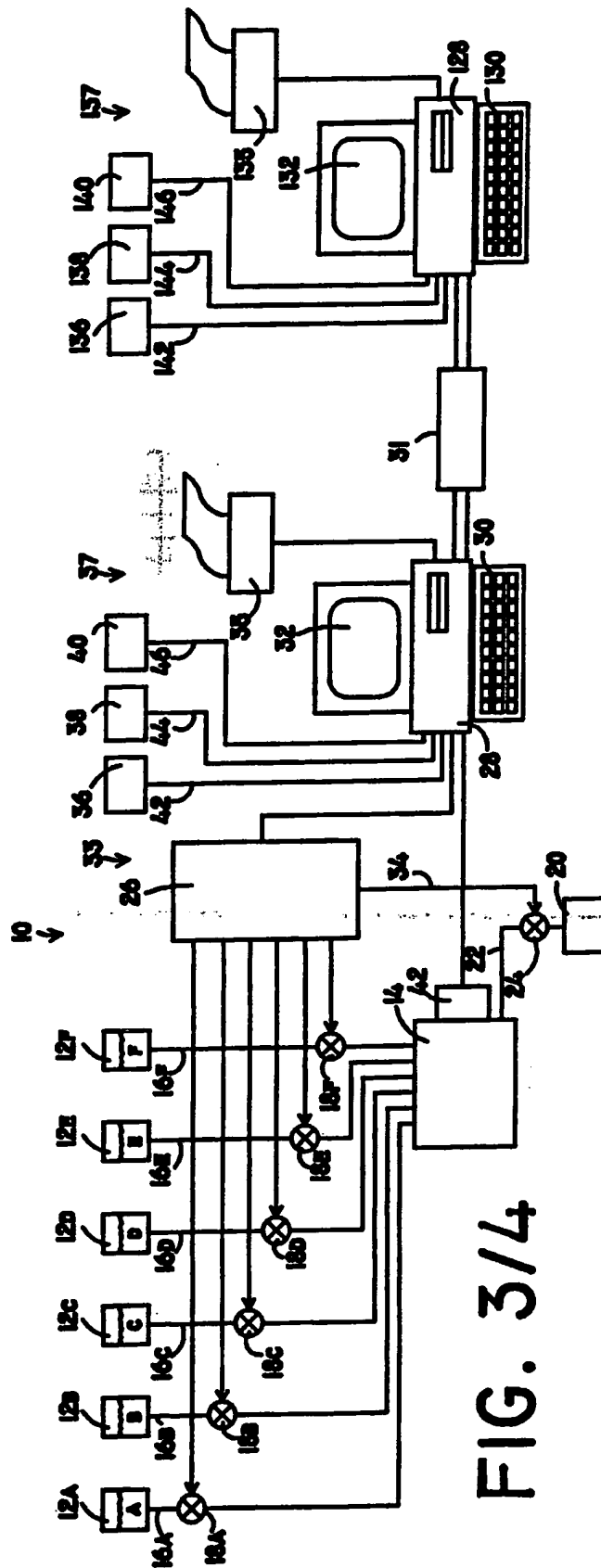
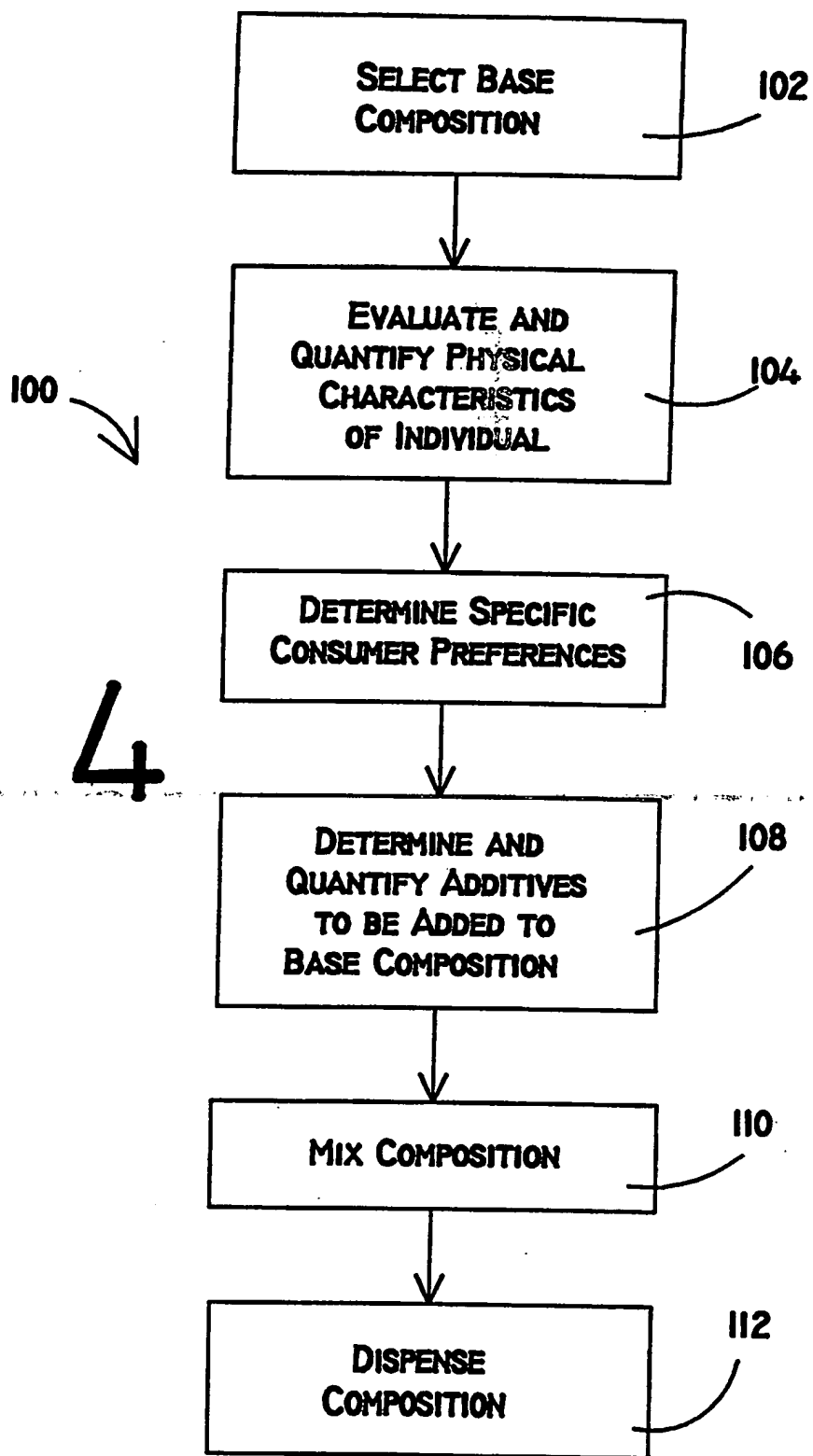


FIG. 3/4

**FIG. 4**